

(19)



(11)

EP 2 719 367 A2

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:

16.04.2014 Bulletin 2014/16

(51) Int Cl.:

A61H 23/02^(2006.01) A61H 7/00^(2006.01)

(21) Application number: **12811402.2**

(86) International application number:

PCT/KR2012/005555

(22) Date of filing: **13.07.2012**

(87) International publication number:

WO 2013/009119 (17.01.2013 Gazette 2013/03)

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

- **YI, Seunghwan**
Seoul 140-777 (KR)
- **HWANG, Cheonghwan**
Seoul 140-777 (KR)
- **PARK, Wooram**
Seoul 140-777 (KR)
- **OH, Taekjin**
Seoul 140-777 (KR)
- **KANG, Byungyoung**
Seoul 140-777 (KR)

(30) Priority: **13.07.2011 KR 20110006379 U**

(71) Applicant: **Amorepacific Corporation**
Seoul 140-777 (KR)

(74) Representative: **Eder, Michael**
df-mp
Fünf Höfe
Theatinerstrasse 16
80333 München (DE)

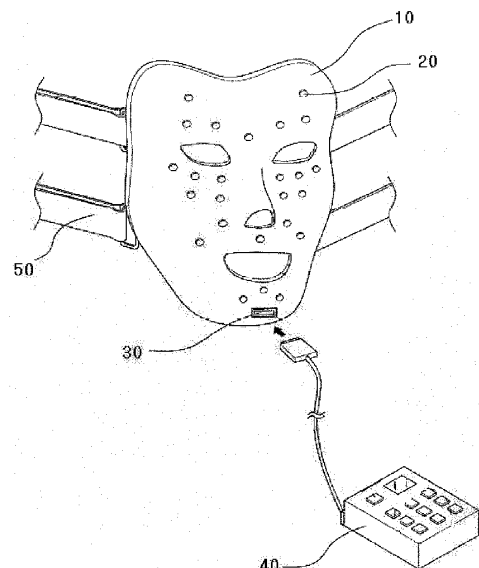
(72) Inventors:

- **PARK, Changman**
Seoul 140-777 (KR)
- **LEE, Changkeun**
Seoul 140-777 (KR)
- **SHIN, Taehong**
Seoul 140-777 (KR)

(54) **FACE MASSAGING DEVICE**

(57) The present invention relates to a face massaging device which can massage the full or a localized area of the face by operating a vibration module of a mask independently, without external power source, and can provide a variety of massaging functions simulating massaging effects performed by human hands, such as stroking, rubbing, pinching, pressing and tapping, by operating the vibrator of the vibration module in a variety of vibration patterns using a pulse width modulation (PWM). The face massaging device, according to the present invention, comprises: a mask having an accommodating space in the interior thereof; and at least one vibration module, which is accommodated in the accommodation space of the mask, and which can be operated independently with a power source therein.

[Fig. 1]



EP 2 719 367 A2

Description

Field of the Invention

[0001] The present invention relates to a massage device for human face, and more particularly, to a massage device for human face for driving vibration modules of a mask individually even without an external power supply to massage local or overall area of the human face and for driving vibrators of the vibration modules in various vibration pattern of pulse width modulation (PWM) to provide various massage functions such as appeasing, rubbing, picking, pressing, and knocking similar to massage carried out by human hands.

Description of the Related Art

[0002] In general, in order to improve elasticity of skin and to prevent aging, various cosmetics and functional cosmetics such as massage cream are used and professional massage shops performing skin care using the functional cosmetics are increased.

[0003] Moreover, a massage device (hereinafter, referred to as a "facial massage device") stimulating human face is provided and is configured to attach a vibration motor to a face-shaped mask to apply vibration to the human face such that blood can be easily circulated and skin aging can be delayed.

[0004] FIG. 1 shows an existing facial massage device, and as illustrated in FIGS. 1 the existing skin facial massage device includes a mask 10, an electrode node (not shown) installed to the mask 10, an LED indicators 20, an input terminal 30, a controller 40, and wearing bands 50.

[0005] The mask 10 is made of very soft silicon material having a standard face shape enough to cover human face.

[0006] The electrode node is installed inside the mask 10 and stimulates the human face by making electric current flow through the human face.

[0007] The LED indicators 20 are installed on the outer side of the mask 10 to visually indicate whether the electrode node is operated normally.

[0008] The input terminal 30 receives electric power and various control signals required to drive the electrode node and the LED indicators 20 from the controller 40.

[0009] The controller 40 supplies driving electric power to the mask 10, allows a user to input various preset values, and transmits various control signals to a driving circuit board (not shown) according to the input preset values.

[0010] Finally, the wearing bands 50 are attached to lateral sides of the mask 10 such that a user can wear the mask on his/her face.

[0011] However, the existing facial massage device is operated only when being provided with the controller because the mask is electrically connected through coupling between the input terminal of the mask and a con-

ductor of the controller and electric power is applied from the controller to the electrode node of the mask. In other words, in order to operate the electrode node of the mask for use of the facial massage functions, the facial massage device must be provided with the controller, and due to this it is inconvenient to use and carry the existing facial massage device and overall operation of the facial massage device is impossible when the battery mounted to the controller is discharged.

[0012] Moreover, since the existing facial massage device is a device in which the electrode node is driven or stopped by the electric power supplied from the controller, it is impossible to apply massage functions to a specific portion of face or vice versa. For example, it is impossible for a user to receive the massage functions to portions of his/her face excluding a wound. Due to this, a user must avoid using the existing massage device or must be massaged while avoiding the massage device.

[0013] Moreover, the existing facial massage device controls stimulation strength to a portion of face by adjusting current applied to the electrode node but cannot provide various stimulations like massage carried out by hands, resulting in providing only simple massage functions.

Detailed description of the Invention

Technical problem

[0014] The present invention has been made to overcome the above problem and provide a facial massage device including a plurality of vibration modules independently driven by own power supplies and operated with only a mask regardless of an external power supply.

[0015] The present invention also provides a facial massage device allowing a user to select a portion to which massage function is applied such as to select a specific portion of user's face or to exclude the other portion of the face.

[0016] The present invention also provides a facial massage device for providing various massage functions such as appeasing, rubbing, picking, pressing, and knocking by controlling vibration patterns of the vibration modules.

Solution to problem

[0017] In order to achieve the foregoing and/or other aspects of the present invention, there is provided a facial massage device, including: a mask having an accommodation space therein; and at least one vibration module accommodated in the accommodation space of the mask and having own power supply for allowing an independent operation.

[0018] The mask comprises a first mask and a second mask circumstances of which are fixed to each other to form the accommodation space therein, and at least one of the first mask and the second mask has at least one

of insertion holes for insertion and withdraw of the vibration module.

[0019] Moreover, the vibration module includes: a printed circuit board; a vibrator installed on the printed circuit board; a drive mounted on the printed circuit board to provide vibration force of the vibrator when electric power is supplied; a battery supplying the electric power to the drive; a supporting plate integrally connecting the printed circuit board to the battery; a power connecting member electrically connecting power terminals of the battery to power terminals of the drive on the printed circuit board; and an insulator attached to a contact region between the power terminals of the battery and the power connecting member and allowing contact between the power terminals of the battery and the power connecting member when the vibration module is separated from the battery.

[0020] The vibration module further includes a controller controlling the drive to control the vibration state of the vibrator, and the controller controls the drive in pulse width modulation (PWM) such that at least two different pulses are output to the drive while the at least two different pulses are sequentially output according to a pre-set reference or only one pulse is continuously output.

[0021] The facial massage device further includes a wearing unit for allowing the mask to be put on human head.

Advantageous effects of invention

[0022] The facial massage device of the present invention can exhibit massage functions by driving a plurality of vibration modules of a mask which are independently driven by own power supply even without a separated external power supply so that user convenience and mobility can be improved.

[0023] Moreover, since a specific portion of human face is massaged or the other portion excluding the specific portion is massaged by user's choice, the facial massage device of the present invention can provide proper massage functions according to face skin conditions and personal tendency.

[0024] In addition, the facial massage device of the present invention can provide various massage function such as appeasing, rubbing, picking, pressing, and knocking by controlling vibration patterns of the vibration modules so that massage functions and effects thereof can be maximized.

Brief Description of the Drawings

[0025]

FIG. 1 is a perspective view illustrating an existing facial massage device;

FIG. 2 is a perspective view illustrating a facial massage device according to an exemplary embodiment of the present invention;

FIG. 3 is an exploded perspective view illustrating the facial massage device according to the exemplary embodiment of the present invention;

FIG. 4 is a sectional view taken along the line A-A of FIG. 2;

FIG. 5 is a perspective view illustrating a vibration module of the facial massage device according to the exemplary embodiment of the present invention; FIG. 6 is a side view of the vibration module of FIG. 5; FIGS. 7A to 7E are views showing output pulses from a controller of the vibration module of the facial massage device according to the exemplary embodiment of the present invention; and

FIG. 8 is a rear side view illustrating the vibration module of the facial massage device according to the exemplary embodiment of the present invention.

Best mode for carrying out the invention

[0026] Hereinafter, a facial massage device according to an exemplary embodiment of the present invention will be described in detail with reference to the accompanying drawings.

[0027] FIG. 2 is a perspective view illustrating a facial massage device according to an exemplary embodiment of the present invention, FIG. 3 is an exploded perspective view illustrating the facial massage device according to the exemplary embodiment of the present invention, FIG. 4 is a sectional view taken along the line A-A of FIG. 2, FIG. 5 is a perspective view illustrating a vibration module of the facial massage device according to the exemplary embodiment of the present invention, FIGS. 7A to 7E are views showing output pulses from a controller of the vibration module of the facial massage device according to the exemplary embodiment of the present invention, and FIG. 8 is a rear side view illustrating the vibration module of the facial massage device according to the exemplary embodiment of the present invention.

[0028] As illustrated in FIG. 2, a facial massage device according to an exemplary embodiment of the present invention includes a mask 200 and a plurality of vibration modules 100 and configurations and operations of elements thereof will be described with reference to FIG. 2.

[0029] The mask 200 forms an accommodation space for the vibration modules 100 such that the vibration modules 100 are accommodated in the accommodation space of the mask 200 and provide massage function to human face during vibration. At least one vibration module 100 may be provided and has own power supply to be driven independently. Due to this, the facial massage device drives the vibration modules 100 of the mask 200 without an external power supply to provide various massage functions and massages a specific portion of human face or the other portion excluding the specific portion.

[0030] The facial massage device according to the exemplary embodiment of the present invention will be described with reference to FIGS. 2 to 8.

[0031] Referring to FIGS. 2 to 4, the facial massage

device includes a first mask 210, a second mask 220, and vibration modules 100. The facial massage device may further include a wearing unit 300.

[0032] The first mask 210 and the second mask 220 are fixed by the circumstance of the mask to form the accommodation space therein. At least one of the first mask 210 and the second mask 220 has insertion holes allowing the vibration modules 100 to be inserted or withdrawn therethrough or insertion holes 210a through which insulators 180 of the vibration modules are withdrawn out. In this embodiment, the first mask 210 has the insertion holes 210a for withdraw of the insulators 180.

[0033] The vibration modules 100 will be described with FIGS. 5 to 8. Referring to FIGS. 5 and 6, each of the vibration modules 100 includes a printed circuit board 110, a vibrator 120, a drive 130, a controller 140, a battery 150, a supporting plate 160, a power connecting member 170, and an insulator 180.

[0034] The printed circuit board 110 is configured such that the vibrator 120 is installed on a side thereof and the drive 130 and the controller 140 are mounted thereon. Thus, the printed circuit board 110 has a circuit pattern for electrical connection between the battery 150, the drive 120, and the controller 130. The printed circuit board 110 may be a flexible printed circuit board (FPCB) for the purpose of allowing the vibration modules 100 being bent along contours of a user's face and closed attached thereto.

[0035] The vibrator 120 is installed on the printed circuit board 110 and vibrates by receiving an electric power by the drive 130. The vibrator 120 is a device stimulating user's skin with vibration therefrom. That is, the vibrator 120 is not only a device of the vibration module 100 directly performing facial massage but also a device transmitting power the facial massage to the whole vibration module 100. The vibrator 120 may be inserted into vibrator holes 160a formed in the printed circuit board 110 and the supporting plate 160.

[0036] This is because of reduction of overall thickness of the vibration module of the facial massage device 100, and in other words, the overall thickness of the vibration module 100, when the vibrator 120 is installed on a side of the printed circuit board 110, becomes sum of the thickness of the vibrator 120 and the thicknesses of the printed circuit board 110 and the supporting plate 160. Thus, the vibrator holes 160a are formed in the printed circuit board 110 and the supporting plate 160 and the vibrator 120 is inserted into the vibrator holes 160a and the thicknesses of the printed circuit board 110 and the supporting plate 160 is subtracted from the overall thickness of the vibration module 100 so that the overall thickness of the vibration module 100 can be reduced.

[0037] The drive 130 is mounted on the printed circuit board 110 and received electric power from the battery 150 to supply the received electric power to the vibrator 120. The drive 130 may be any one of a vibration motor, a solenoid, a piezo device, and a linear vibrator.

[0038] The controller 140 is mounted on the printed circuit board 110 and controls the drive 130 to adjust vibration of the vibrator 120. The controller 140 controls the drive 130 in pulse width modulation (PWM). That is, the controller 140 operates the drive 130 in various modes through the PWM, while outputting at least two different pulses wherein the different output pulses are sequentially output or only a preset one type pulse is continuously output. The vibrator 120 may vibrate to provide various massage functions such as appeasing, rubbing, picking, pressing, knocking, etc., according to the various output pulses and the operating conditions of the drive 130.

[0039] As illustrated in FIG. 7, FIGS. 7A to 7I are views showing massage operations of the vibrator which vibrates in different types according to output pulses output from the controller 140 to the drive 130. That is, the colored portions in the drawings are portions to which vibration of the vibrator is transmitted and the other portion is portion where the vibrator is stopped or not attached.

[0040] FIG. 7A shows a case where relatively strong vibration continues same intensity for a preset time, FIG. 7B shows relatively strong vibration of same intensity repeated every preset short time interval, and FIG. 7C shows relatively strong vibration of same intensity repeated for a preset time every short time interval. Moreover, FIG. 7D shows visually weak vibration being gradually stronger for a preset time after starting and FIG. 7E shows strong vibration being gradually weakening for a preset time after starting contrary to the case of FIG. 7D. FIG. 7F shows early weak vibration is gradually stronger to the peak and is gradually weakened again. The description for the rest drawings, FIGS. 7G to 7I is omitted.

[0041] Return to FIGS. 5 and 6, the battery 150 is installed on the supporting plate 160 and supplies electric power to the drive 130 and the controller 140 through the power connecting member 170. The battery 150 may be inserted into a battery hole 160b formed in the supporting plate 160 so as to reduce the overall thickness of the vibration module 100 and its description is omitted because this is substantially identical to the insertion of the vibrator 120 into the vibrator holes 160a.

[0042] The supporting plate 160 is provided to connect the printed circuit board 110 to the battery 150 integrally. The supporting plate 160 may be made of a flexible material such that flexibility of the vibration module 100 can be guaranteed. Moreover, the supporting plate 160 may be configured such that the battery 150 and the vibrator 120 are mounted at the ends in the major axis on an oval side of the supporting plate 160, respectively. Thus, devices are not mounted at the middle portion of the major axis and due to this the supporting plate 160 can exhibit elasticity and higher flexibility.

[0043] The power connecting member 170 electrically connects the power terminals (not shown) of the battery 150 to the power terminals (not shown) of the drive 130 on the printed circuit board 110. In other words, the drive 130 receives electric power from the battery 150 through

the power connecting member 170. Moreover, the power terminals of the printed circuit board 110 may supply electric power to the controller 140 and in this case the printed circuit board 110 has circuit patterns connecting the power terminals to the drive 130 and the controller 140 in parallel.

[0044] The insulator 180 is attached to a contact area between the power terminals of the battery 150 and the power connecting member 170. That is, the insulator 180 is attached to the battery 150 to interrupt the electrical connection between the power terminals of the battery 150 and the power connecting member 170 and the electrical connection between the power terminals of the battery 150 and the insulator 180 is made when the insulator 180 is separated from the battery 150. The insulator 180 is detachably attached to the battery 150 and controls the electrical connection between the power terminals of the battery 150 and the power connection member 170 through the attachment and detachment of the insulator 180 to control the electric power to be supplied from the battery 150 to the drive 130 or not.

[0045] In other words, the insulator 180 can switch the electrical connection between the power terminals of the battery 150 and the power connecting member 170 and in this case the vibration module 100 can spend the electric power of the battery 150 only by the switching function of the insulator 180 even without a separated switch. That is, omission of the switch allows reduction of volume of the vibration module 100 and the electric power of the battery 150 may be spent only when the vibrator 120 is operated.

[0046] Although in this exemplary embodiment a thin sheet of the insulator 180 is detachably attached to the battery 150 to screen the power terminals, the present invention is not limited thereto but the insulator 180 may be attached to and detached from power terminal regions of the battery 150 and may be modified under the conditions of applying electric power between the power terminals of the battery 150 and the power connecting member 170.

[0047] FIG. 8 is a rear side view of the vibration module of the facial massage device according to the exemplary embodiment of the present invention in which the battery 150 and the vibrator 120 are inserted into the battery hole 160b and the vibrator holes 160a that are formed in the printed circuit board 110 and the supporting plate 160 and are fixed thereto. A buffering pad (not shown) may be attached to the rear side of the vibration module 100 (the rear side of the supporting plate) and may prevent direct contact between the vibrator 120 and human skin. In FIG. 8, the buffering pad is omitted for the purpose of showing the battery hole 160b and the vibrator holes 160a and ones of sides of the battery 150 and the vibrator 120 which are inserted thereto. Moreover, the buffering pad may be made in various types such as nonwoven fabric or a sheet containing liquid material.

[0048] Referring to FIGS. 2 to 4 again, the wearing unit 300 puts the mask on human head and is like a hair band

in this embodiment, but the present invention is not limited thereto. The wearing unit 300 consists of a pair of bands one ends of which are fixed to lateral sides of the mask 200 and the other ends of which are provided with Velcro tapes 310 for connecting each other. Lengths of the Velcro tapes 310 are relatively long such that length of the wearing unit 300 can be adjusted by contact portions between the Velcro tapes 310.

[0049] As described with reference to FIGS. 2 to 8, the facial massage device of the present invention can exhibit massage functions by driving a plurality of vibration modules 100 of the mask 200 which are independently driven by own power supply even without a separated external power supply. Moreover, since a plurality of vibration modules 100 massage a specific portion of human face or the other portion excluding the specific portion by user's choice, the facial massage device of the present invention can provide proper massage functions according to face skin conditions and personal tendency.

[0050] In addition, since the drives of the vibration modules 100 are controlled in pulse width modulation (PWM) to drive the vibrators receiving power from the drives to be operated in various vibration patterns, the facial massage device of the present invention can provide various massage function such as appeasing, rubbing, picking, pressing, and knocking by controlling vibration patterns of the vibration modules.

[0051] While this invention has been particularly shown and described with reference to preferred embodiments thereof, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the concept of the invention to those skilled in the art. It will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

[Explanation of reference signs]

[0052]

100: a vibration module for skin massage 110: a printed circuit board
120: a vibrator 130: a drive
140: a controller 150: a battery
160: a supporting plate 160a: a vibrator hole
160b: a battery hole 170: a power connecting member
180: an insulator 200: a mask
210: a first mask 210a: an insertion hole
220: a second mask 300: a wearing unit
310: a Velcro tape

Claims

1. A facial massage device, comprising:

a mask having an accommodation space there-
 in; and
 at least one vibration module accommodate in
 the accommodation space of the mask and hav-
 ing own power supply for allowing an independ- 5
 ent operation.

2. The facial massage device of claim 1, wherein the
 mask comprises a first mask and a second mask 10
 circumstances of which are fixed to each other to
 form the accommodation space therein, and at least
 one of the first mask and the second mask has at
 least one of insertion holes for insertion and withdraw
 of the vibration module. 15

3. The facial massage device of claim 1, wherein the
 vibration module comprises:

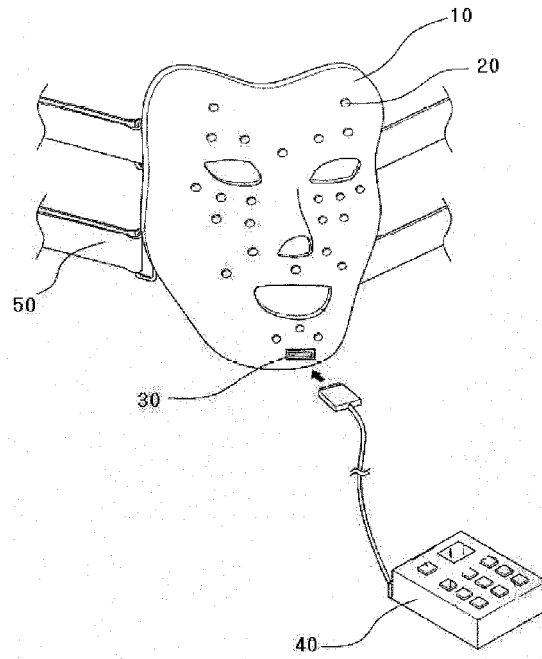
a printed circuit board;
 a vibrator installed on the printed circuit board; 20
 a drive mounted on the printed circuit board to
 provide vibration force of the vibrator when elec-
 tric power is supplied;
 a battery supplying the electric power to the 25
 drive;
 a supporting plate integrally connecting the
 printed circuit board to the battery;
 a power connecting member electrically con-
 necting power terminals of the battery to power 30
 terminals of the drive on the printed circuit board;
 and
 an insulator attached to a contact region be-
 tween the power terminals of the battery and the
 power connecting member and allowing contact 35
 between the power terminals of the battery and
 the power connecting member when the vibra-
 tion module is separated from the battery.

4. The facial massage device of claim 3, wherein the
 vibration module further comprises a controller con- 40
 trolling the drive to control the vibration state of the
 vibrator, and
 the controller controls the drive in pulse width mod-
 ulation (PWM) such that at least two different pulses 45
 are output to the drive while the at least two different
 pulses are sequentially output according to a preset
 reference or only one pulse is continuously output.

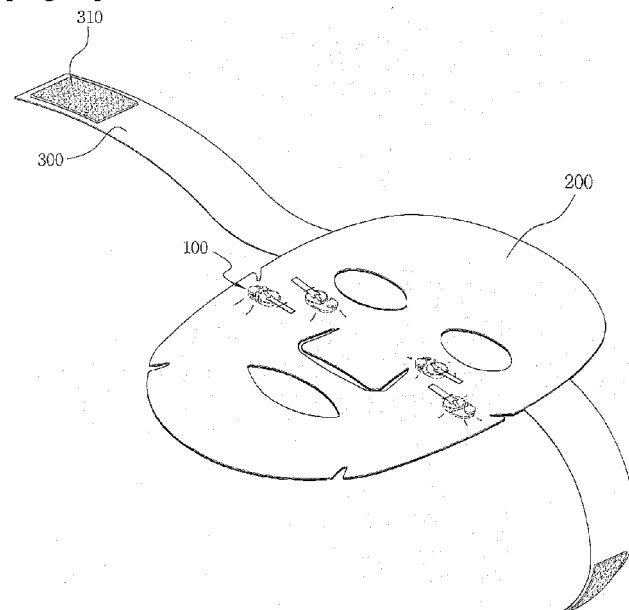
5. The facial massage device of claim 1, further com- 50
 prising a wearing unit for allowing the mask to be put
 on human head.

55

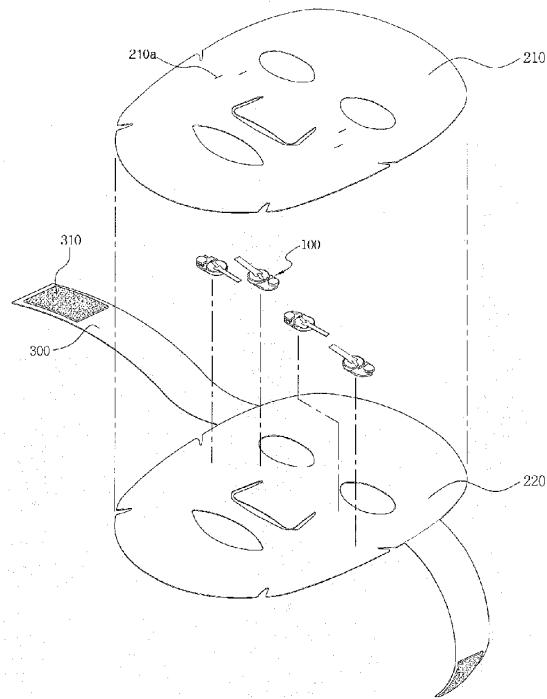
[Fig. 1]



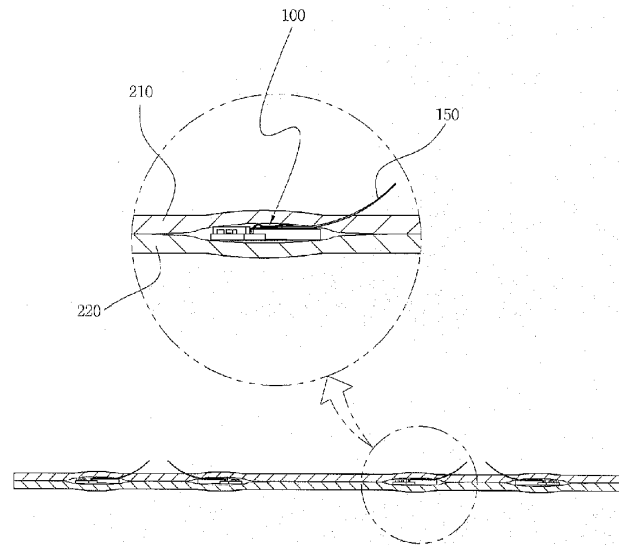
[Fig. 2]



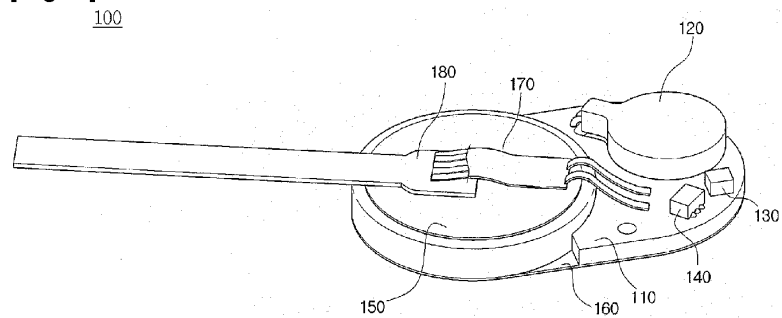
[Fig. 3]



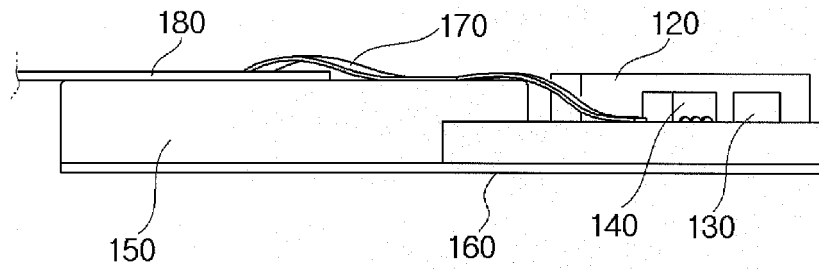
[Fig. 4]



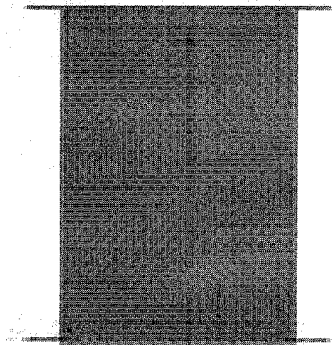
[Fig. 5]



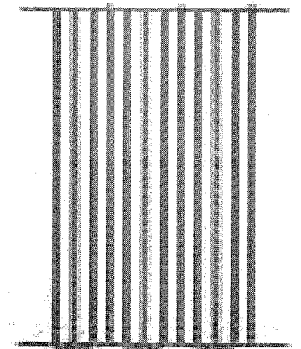
[Fig. 6]



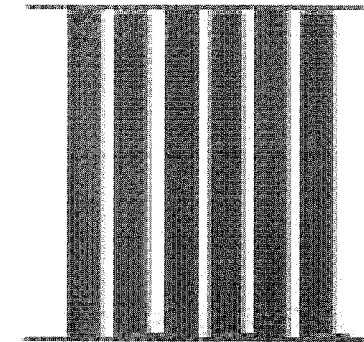
[Fig. 7a]



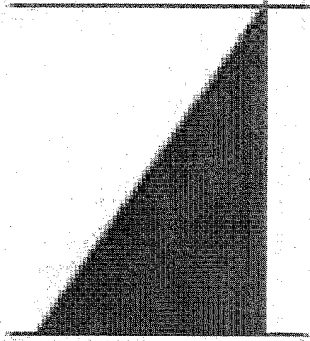
[Fig. 7b]



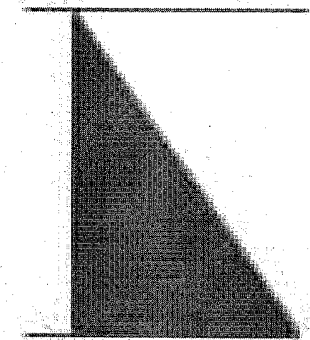
[Fig. 7c]



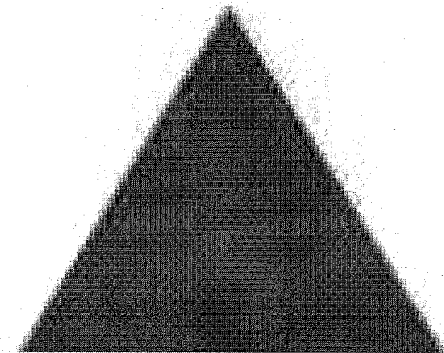
[Fig. 7d]



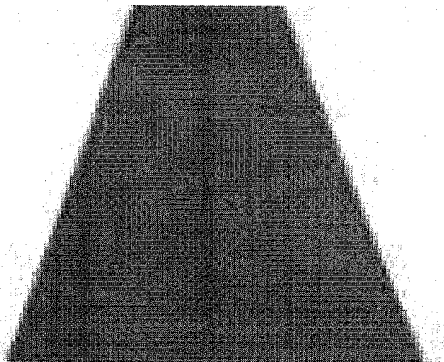
[Fig. 7e]



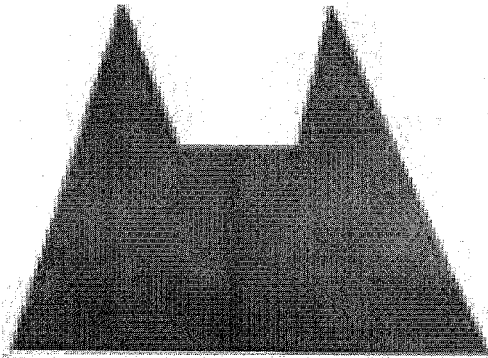
[Fig. 7f]



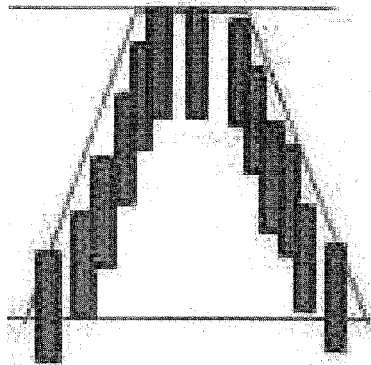
[Fig. 7g]



[Fig. 7h]



[Fig. 7i]



[Fig. 8]

